Certification Summary Information Report

KBX Manufacturer Kubota Corporation Manufacturer Code GKBXL.719KCC-013 **Engine Family** GKBXL.719KCC Certificate Number **Certificate Issue Date** 10/22/2015 Certificate Effective Date 10/22/2015 **Model Year** 2016 CARB Executive Order # N/A Certificate Revision n **Certificate Revision Date** N/A Number Test Dataset numbers in this file: General Information **New Submission** Manufacturer Engine Family N/A CSI Type Alternate Trade Names Manufacturer Type Original Engine Manufacturer **Branding Arrangement** List Of Engine Families Modified Carry Over from a previous Carry Over Engine Family DKBXL.719KCC Engine Family? Yes Name Running Change(s) Field Edits **Application Federal** Part 1039 Mobile/Stationary Application Mobile Regulation Tier 4 (Final or Phase In) Offset Engines None Application Tier Combining Engines from Multiple Power Applicable Compliance Standard Not Applicable No Categories? **Includes Engines for** 8<=kW<19 **Electrical Generator set?** Power Category No If used for a Stationary Fire Pump, is rated speed > 2650? Limited Application Constant Speed Engines Limited Application Enforcement Description Engine speed is to be controled by fixing either engine speed control lever, or lever of equipment side or solenoid. ABT and FEL Information Not to Exceed (NTE) Compliance Information Ambient Operation Region for NTE Testing NTE Testing and Approach Description Are you petitioning EPA to exclude operating points from NTE Testing because the engine is incapable of operation at those points? Description of how the engine is incapable of operation at the excluded operating points Limit NTE Testing in a single defined region of speeds and loads? No Are you requesting approval for an NTE Deficiancy No **Engine Description Engine Combustion Cycle** 4 Stroke Compression Ignition **Fuel Options** Single Fuel Fuel #1 Fuel 7-15 ppm Ultra Low Sulfur Diesel Fuel (if other) Fuel Metering System Indirect Diesel Injection **Engine Family Comments**

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Engine Family	GKBXL.719KCC	Model Year	2016	
-				
Useful Life				
Useful Life of the Engine Fam	ily 5 years / 3,000 hrs		*	
Production Information				
	∤			
Manufacturing plant for these				
Engines	Kubota Japan			
Agents For Service in US	Zeal Tajpuria			
U.S. Po	rt of Import Name	City	State	
NE	W ORLEANS	NEW ORLEANS	Louisiana	
	PHOENIX	PHOENIX	Arizona	
1	NEW YORK	NEW YORK	New York	
	DENVER	DENVER	Colorado	
	CHICAGO	CHICAGO	Illinois	
LC	S ANGELES	LOS ANGELES	California	
	MIAMI	MIAMI	Florida	
K.	ANSAS CITY	KANSAS CITY	Missouri	
INI	DIANAPOLIS	INDIANAPOLIS	Indiana	
	TACOMA	TACOMA	Washington	
	ATHENS	ATHENS	Georgia	
	ATLANTA	ATLANTA	Georgia	
C	HARLOTTE	CHARLOTTE	North Carolina	
C	LEVELAND	CLEVELAND	Ohio	
	ST. LOUIS	ST. LOUIS	Missouri	
	SEATTLE	SEATTLE	Washington	
M	ILWAUKEE	MILWAUKEE	Wisconsin	
MI	NNEAPOLIS	MINNEAPOLIS	Minnesota	
	DAKLAND	OAKLAND	California	
	DALLAS	DALLAS	Texas	
LC	ONG BEACH	LONG BEACH	California	
Manufacturer Comments abou	2000 AUG			
ure Carryover. (No running cha	inge made in 2015MY for this fami	ily.) The support documents are same	as previous engine family.	

Engine Family	GKBXL.719KCC	Model Year	2016
Emission Control Systems			
Non-After Treatment Devices			
Are Non-ATDs used on this Engine Family?	Yes	Non-ATD Types	Engine Design Modification
Additional Comments about these	Non-ATDs		
After Treatment Devices			
Are After Treatement Devices used on this Engine Family?		Will Engine Family be produced using Delegated Assembly?	No
Is the Cost of ATD components included in the cost of engine?	-		
List of Components covered under	Delegated Assembly exemption		
Are Infrequent Adjustment Factors being used?	-		
Adjustable Parameters			
Are Adjustable Parameters used with this Engine Family?	Yes		
Adjustable Parameter #1			
Adjustable Parameter Name	Rated Fuel Rate		
Adjustable Parameter Description			
Adjustable Range: +/- 5.0% Tamper	Resistance Method: Push-Nut (CARB	NCC-2001-014)	

Engine Family	GKBXL.719KCC	Model Year	2016	
Models and Parts				
Engine Model #1				
Engine Model	D722-D2-EF	Engine Code	D722-D2-EF0	1
Displacement Per Cylinder (in liters)	0.24	Total Displa liters)	cement (in 0.719	
Engine Block Arrangement	Inline			
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
3	67	68	15	3600
Maximum Torque (N*m)	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Power (Kw)
40.6	3600	3600	40.6	15
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)
2700	5	5	15.2	15.2
Method of Aspiration	Naturally Aspirated			
)27 (a - 45 - 51 AN - 47 - 5547) - 7054 - 45	5. 3	Aspiration D		
Number of Aspiration Devices	t)	Configuration	n	
Turbocharger Type(s)				
Charge Cooler Type				
Variable Valve Timing?	No			
Variable Valve Lift?	No	7 <u>2</u> 21 2 3222	2 200	
Number of Inlet Valves per cylinder	1	Number of E per cylinder	xhaust Valves	
Production and Sales Infor	mation			
Sales Area	Both			
Production Start Date		Production E	End Date	
Engine Parts			o plane e de la calcina de la	
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injectors	16001-53002	3	01/01/2016	12/31/2016
Fuel Injection Pump	16006-51012	1	01/01/2016	12/31/2016
Fuel Injectors	16871-53002	3	01/01/2016	12/31/2016
Fuel Injection Pump	17549-51014	1	01/01/2016	12/31/2016
Fuel Injection Pump	1G820-51013	1	01/01/2016	12/31/2016
Engine Model #2				
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF01	
Displacement Per Cylinder (in iters)	0.24	Total Displac	ement (in 0.479	
Engine Block Arrangement	Inline			
Number of Cylinders	Bore (mm) 67	Stroke (mm) 68	Rated Power (kW)	Rated Speed (RPM) 3600
Maximum Torque (N*m) S	12/2	Maximum Speed Test	Torque at Maximum Speed	Maximum Engine Power
27.9	(RPM) 3600	(RPM) 3600	(N*m) 27.9	(Kw) 10
Intermediate Test Speed	Lower Tolerance of	Upper Tolerance of	Fuel Rate at Maximum	Fuel Rate at Rated Speed
(RPM) 2700	Maximum Power (%) 5	Maximum Power (%) 5	Torque (mm3/stroke) 15.4	(mm3/stroke) 15.4
Method of Aspiration	Naturally Aspirated			
		Aspiration D		
Number of Aspiration Devices		Configuration		
Turbocharger Type(s)				
Charge Cooler Type	1000			
/ariable Valve Timing?	No		115-07-28 06:15:05 559	

Engine Family	GKBXL.719KCC	Model Year	2016	
/ariable Valve Lift?	No	*		
Number of Inlet Valves per cylinder	Ī	Number of E per cylinder	Exhaust Valves	
Production and Sales Inform	nation			
Sales Area	Both			
Production Start Date		Production E	End Date	
Engine Parts	A		*	
Provided Provided the about the and the land the	D (N)	P. 10	D. 4 H C4 . 4 D. 4	D4 V FI D-4-
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date 12/31/2016
Fuel Injection Pump	16001-51012	1	01/01/2016	sia espititi con servizioni
Fuel Injectors	16001-53002	2	01/01/2016	12/31/2016
Fuel Injectors	16871-53002	2	01/01/2016	12/31/2016
Fuel Injection Pump	17548-51014	1	01/01/2016	12/31/2016
Fuel Injection Pump	1E110-51013	I	01/01/2016	12/31/2016
Engine Model #3				
Engine Model	Z482-D2-EF	Engine Code)2
Displacement Per Cylinder (in iters)	0.24	Total Displac liters)	cement (in 0.479	
Engine Block Arrangement	Inline			
Number of Cylinders 2	Bore (mm) 67	Stroke (mm) 68	Rated Power (kW)	Rated Speed (RPM) 3600
Maximum Torque (N*m) S		Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	
26.3	3600	3600	26.3	10
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Spee (mm3/stroke)
2700	5	5	15.2	15.2
Method of Aspiration	Naturally Aspirated			
Number of Aspiration Devices	• • • • • • • • • • • • • • • • • • • •	Aspiration D Configuratio		
Surbocharger Type(s)		Conngaratio	5 0	
Charge Cooler Type				
/ariable Valve Timing?	No			
ariable Valve Lift?	No			
Number of Inlet Valves per	-	Number of E	xhaust Valves	
ylinder	1	per cylinder	1	
Production and Sales Inform	nation			
Sales Area	Both			
Production Start Date		Production E	and Date	
Engine Parts				
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injectors	16001-53002	2	01/01/2016	12/31/2016
Fuel Injectors	16871-53002	2	01/01/2016	12/31/2016
Fuel Injection Pump	17548-51014	1	01/01/2016	12/31/2016
Engine Model #4				
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF0	3
			NOS INCOMENSATION	
	12.24	Total Displac		
Displacement Per Cylinder (in iters) Engine Block Arrangement	0.24 Inline	Total Displac liters)	ement (in 0.479	

Engine Family	GKBXL.719KCC	Model Year	2016	
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
2	67	68	10	3600
Maximum Torque (N*m)	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Power (Kw)
25.5	3600	3600	25.5	10
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)
2700	5	5	14.7	14.7
Method of Aspiration	Naturally Aspirated			
		Aspiration D		
Number of Aspiration Device	es	Configuratio	n	
Turbocharger Type(s)				
Charge Cooler Type	550 8			
Variable Valve Timing?	No			
Variable Valve Lift?	No			
Number of Inlet Valves per cylinder	1	Number of E per cylinder	xhaust Valves	
Production and Sales Info	rmation			
Sales Area	Both			
Production Start Date				
Engine Parts				
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injection Pump	16001-51012	1	01/01/2016	12/31/2016
Fuel Injectors	16001-53002	2	01/01/2016	12/31/2016
Fuel Injectors	16871-53002	2	01/01/2016	12/31/2016
Fuel Injection Pump	17548-51014	1	01/01/2016	12/31/2016
Fuel Injection Pump	19007-51014	1	01/01/2016	12/31/2016
Fuel Injection Pump	1E110-51013	1	01/01/2016	12/31/2016
Engine Model #5			3.1.3.1.2.3.3	
	7402 D2 FF	F . 1 . C . 1	Z482-D2-EF04	
Engine Model	Z482-D2-EF	Engine Code		
Displacement Per Cylinder (i liters)	0.24	Total Displac liters)	0.479	
Engine Block Arrangement	Inline			
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
2	67	68	9	3600
2015 W	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	(Kw)
24.4	3600	3600	24.4	9
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)
2700	5	5	14.2	14.2
Method of Aspiration	Naturally Aspirated			
Number of Aspiration Device	1 6	Aspiration De Configuration		
NAT 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	70	Configuration	19 77)	
Turbocharger Type(s)				
Charge Cooler Type	No.			
Variable Valve Timing?	No No			
Variable Valve Lift?	No	N	whoust Volu	
Number of Inlet Valves per cylinder	1	Number of E per cylinder	xhaust Valves 1	
Production and Sales Info	rmation			
Sales Area	Both			
Production Start Date				

Engine Family	GKBXL.719KCC	Model Year	2016	
Engine Parts				
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injection Pump	16001-51012	1	01/01/2016	12/31/2016
Fuel Injectors	16001-53002	2	01/01/2016	12/31/2016
Fuel Injectors	16871-53002	2	01/01/2016	12/31/2016
Fuel Injection Pump	17548-51014	1	01/01/2016	12/31/2016
Fuel Injection Pump	19007-51014	i	01/01/2016	12/31/2016
Fuel Injection Pump	1E110-51013	1	01/01/2016	12/31/2016
Engine Model #6				
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF	05
Displacement Per Cylinder (in liters)	0.24	Total Displac liters)	ement (in 0.479	
Engine Block Arrangement	Inline	,	Filmonia (
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
2 Maximum Torque (N*m) S	67 Speed at Maximum Torque (RPM)	68 Maximum Speed Test (RPM)	7 Torque at Maximum Speed (N*m)	2600 I Maximum Engine Powe (Kw)
26.4	2600	2600	26.4	7
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)
1950	5	5	14.3	14.3
/T.5.(T.73)	#1	,	14.5	14.5
Method of Aspiration	Naturally Aspirated			
Number of Aspiration Devices		Aspiration De Configuration		
Turbocharger Type(s)			A) 88	
Charge Cooler Type				
Variable Valve Timing?	No			
Variable Valve Lift?	No			
Number of Inlet Valves per		Number of E	chaust Valves	
cylinder	1	per cylinder	1	
Production and Sales Inform	mation			
Sales Area	Both			
Production Start Date		Production E	nd Date	
Engine Parts				
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injection Pump	16001-51012	1	01/01/2016	12/31/2016
Fuel Injectors	16001-53002	2	01/01/2016	12/31/2016
Fuel Injectors	16871-53002	2	01/01/2016	12/31/2016
Fuel Injection Pump	17548-51014	1	01/01/2016	12/31/2016
Fuel Injection Pump	19007-51014	í	01/01/2016	12/31/2016
Fuel Injection Pump	1E110-51013	1	01/01/2016	12/31/2016
Engine Model #7	15/10-5/015		0110112010	12.31/2010
	7492 D2 EE	Engine Code	Z482-D2-EF0	16
Engine Model Displacement Per Cylinder (in	Z482-D2-EF	Engine Code Total Displace		10
	0.24	liters)	0.479	
liters)	0.24	inter 51	0.477	

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Engine Family	GKBXL.719KCC	Model Ye	ar	2016	
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Po	wer (kW)	Rated Speed (RPM)
2	67	68	8		3000
Maximum Torque (N*m)	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	t Torque at Ma (N*		Maximum Engine Power (Kw)
26.4	3000	3000	26	.4	8
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Torque (m		Fuel Rate at Rated Speed (mm3/stroke)
2250	5	5	14	.6	14.6
Method of Aspiration	Naturally Aspirated				
Number of Aspiration Devi	ces	Aspiration Configura			
Turbocharger Type(s)					
Charge Cooler Type	-				
Variable Valve Timing?	No				
Variable Valve Lift?	No				
Number of Inlet Valves per cylinder	Ī	Number o per cylind	f Exhaust Valves er	1	
Production and Sales Inf	ormation				
Sales Area	Both				
Production Start Date		Production	n End Date		
Engine Parts					
Part Name	Part Number	Part Quantity	Part Usage	Start Date	Part Usage End Date
Fuel Injection Pump	16001-51012	1	01/01/	2016	12/31/2016
Fuel Injectors	16001-53002	2	01/01/	2016	12/31/2016
Fuel Injectors	16871-53002	2	01/01/	2016	12/31/2016
Fuel Injection Pump	17548-51014	1	01/01/	2016	12/31/2016
Fuel Injection Pump	19007-51014	1	01/01/	2016	12/31/2016
Fuel Injection Pump	1E110-51013	1	01/01/	2016	12/31/2016
Durability Information					
DF Determination Factor	Determined by Manufactu	ırer			
Durability Engines					
Engine Name	Engine Code	E	ngine Id	Engine Serv	ice Accumulation in hours
D1305-EF	D1305-EF01		6L2992		1520
Deterioration Factors					
	Pollutant Name	Deterio	oration Factor		oration Factor Type
	Carbon Monoxide		0	Stea	ady-State Additive
	Methane Hydrocarbons		0		ady-State Additive
8	Particulate Matter		0		ady-State Additive
	Nitrogen Oxides		0	Stea	ady-State Additive

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Engine Family		GKBXL.71	9KCC	Model Year	2016	
Carryover Test In	formation					
Test Dataset #1						
Test Data Type		Test data for in this Engir	r a current engine model ne Family			
Verify Test Dataset Nu	mber	DKBXLM0	002400	Manufacturer Test Dat Number	A4620418	
Engine Model		Z482-D2-EI	7	Engine Code	Z482-D2-EF01	
Engine Id		CE0538		Engine Displacement (i	in 0.479	
Number of hours Engir	ne was run	CE0556		Crankcase Emission	0.479	
prior to test		20		Discharge Path	CCEs Routed into the	ne Air Inlet System
Test Date		06/11/2012				
Test Fuel						
7-15 ppm Ultra Low Sul	fur Diesel					
Special Test Procedure	Used	No				
Test Lab Name			ooration - EEMPD	Test Lab Code	2	
Engine Operation		Constant Speed		Steady-State Cycle Typ		e Cycle
Steady-State Modal Te		Ramped-Mo	Ramped-Modal Testing Transient Test Required No			
Devices Regenerated de Steady State Test (Ran		None				
Devices Regenerated de Start of a Transient Te		None				
Devices Regenerated de Start of a Transient Te		None				
Test Comments						
Manufacturer's Assigned	Test Data N	lo.: A4620418	(RMC) tested on 06/11/2	012		
Steady-State Rampe	d Modal To	est Results				
Pollutant Name	Test	nte Pollutant Result (g/kW-hr)	Certification Emission Result Value (g/kW- hr)	EPA Standard Limit Value (g/kW-hr)	Family Emission Limit Value (g/kW-hr)	Pass/Fail Indicator
Non-Methane Hydrocarbons		548	0.55		-	==
Nitrogen Oxides plus Non-Methane Hydrocarbons			6.0	7.5		Pass
Nitrogen Oxides	5	.48	5.48	4 7.7 4	555.	7.70
Methane	0.	003	0.00	N am o		55. 6
Particulate Matter	0.	212	0.21	0.40		Pass
Carbon Monoxide	- 53	517	2.5	6.6		Pass
Carbon Dioxide	10	12.4	1,012.40	8 <u>4448</u>	22	Name of the second

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Manufacturer Kubota Corporation Manufacturer Code KBX **Engine Family** HKBXL.719KCC Certificate Number HKBXL.719KCC-007 **Certificate Issue Date** 11/21/2016 Certificate Effective Date 11/21/2016 **Model Year** 2017 CARB Executive Order # N/A Certificate Revision Certificate Revision Date N/A n Number Test Dataset numbers in this file: General Information Manufacturer Engine Family N/A New Submission CSI Type Alternate Trade Names Manufacturer Type Original Engine Manufacturer **Branding Arrangement** List Of Engine Families Modified Carry Over from a previous Carry Over Engine Family DKBXL.719KCC Engine Family? Yes Name Running Change(s) Field Edits Application Federal Mobile/Stationary Application Part 1039 Mobile Regulation Applicable Compliance Application Tier Tier 4 (Final or Phase In) Not Applicable Standard Certification based on Offset Engines None CARB Executive Order? No Combining Engines from Multiple 8<=kW<19 Power Categories? No **Power Category** If used for a Stationary Includes Engines for Electrical Fire Pump, is rated speed > Generator set? 2650? No Limited Application Constant Speed Engines Limited Application Enforcement Engine speed is to be controled by fixing either engine speed control lever, or lever of equipment side or solenoid. Description ABT and FEL Information Participating in Averaging, Alternate Family Emission No Limit Caps used? Not to Exceed (NTE) Compliance Information Ambient Operation Region for NTE Testing and Approach Description Are you petitioning EPA to exclude operating points from NTE Testing because the engine is incapable of operation at those points? No Description of how the engine is incapable of operation at the excluded operating points Limit NTE Testing in a single defined region of speeds and loads? No Are you requesting approval for an NTE Deficiancy No **Engine Description Engine Combustion Cycle** 4 Stroke Compression Ignition **Fuel Options** Single Fuel Fuel #1 Fuel 7-15 ppm Ultra Low Sulfur Diesel Fuel (if other) Fuel Metering System Indirect Diesel Injection

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Engine Family	HKBXL.719KCC	Model Year	2017
Engine Family Comments			
-		Ē.	
Useful Life			
Useful Life of the Engine Family	5 years / 3,000 hrs		
Production Information			
Total Projected Sales		Federal Projected Sales	
California Projected Sales			# · · · · · · · · · · · · · · · · · · ·
Production		Production End Date	
Manufacturing plant for these			
Engines	Kubota Japan		
Agents For Service in US	Zeal Tajpuria		
U.S. Port of I	nport Name	City	State
LONG B	EACH	LONG BEACH	California
SEAT	TLE	SEATTLE	Washington
CLEVE	LAND	CLEVELAND	Ohio
CHICA	AGO	CHICAGO	Illinois
NEW OR	LEANS	NEW ORLEANS	Louisiana
ATLA	NTA	ATLANTA	Georgia
MINNEA	POLIS	MINNEAPOLIS	Minnesota
TACO	MA	TACOMA	Washington
MILWA	UKEE	MILWAUKEE	Wisconsin
NEW Y	ORK	NEW YORK	New York
INDIANA	APOLIS	INDIANAPOLIS	Indiana
DEN	/ER	DENVER	Colorado
ATHE		ATHENS	Georgia
CHARL		CHARLOTTE	North Carolina
LOS ANG		LOS ANGELES	California
KANSAS		KANSAS CITY	Missouri
ST. LC		ST. LOUIS	Missouri
MIA		MIAMI	Florida
DALI		DALLAS	Texas
OAKL		OAKLAND	California Arizona
PHOE		PHOENIX	

Engine Family	HKBXL.719KCC	Model Year	2017
Emission Control Systems			
Non-After Treatment Devices			
Are Non-ATDs used on this Engine Family?	Yes	Non-ATD Types	Engine Design Modification
Additional Comments about these	Non-ATDs		
After Treatment Devices			
Are After Treatement Devices used on this Engine Family?	¥	Will Engine Family be produced using Delegated Assembly?	No
Is the Cost of ATD components included in the cost of engine?	_		
List of Components covered under	r Delegated Assembly exemption		
Are Infrequent Adjustment Factors being used?			
Auxillary Emissions Control D	evices		
Are Auxillary Emissions Control Devices used on this Engine Family?	•		
Adjustable Parameters			
Are Adjustable Parameters used with this Engine Family?	Yes		
Adjustable Parameter #1			
Adjustable Parameter Name	Rated Fuel Rate		
Adjustable Parameter Description	L.,		
Adjustable Range: +/- 5.0% Tamper	Resistance Method: Pipe (CIHD-2016	6-041)	

Engine Family	HKBXL.719KCC	Model Year	2017	
Models and Parts				
Engine Model #1				
Engine Model	D722-D2-EF	Engine Code	D722-D2-EF0	1
Displacement Per Cylinder (in		Total Displa		
liters)	0.24	liters)	0.719	
Engine Block Arrangement	Inline			
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
3	67	68	15	3600
Maximum Torque (N*m)	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Power (Kw)
40.6	3600	3600	40.6	15
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)
2700	5	5	15.2	15.2
Method of Aspiration	Naturally Aspirated			
		Aspiration D		
Number of Aspiration Devices	5	Configuration	on	
Turbocharger Type(s)				
Charge Cooler Type	••			
Variable Valve Timing?	No			
Variable Valve Lift?	No	V	N. b 4 W. b	
Number of Inlet Valves per cylinder	Ĩ	per cylinder	Exhaust Valves	
Production and Sales Infor	mation			
Sales Area	Both			
Production Start Date		Production I	End Date	
Engine Parts				
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injectors	16001-53002	3	01/01/2017	12/31/2017
Fuel Injection Pump	16006-51012	1	01/01/2017	12/31/2017
Fuel Injectors	16871-53002	3	01/01/2017	12/31/2017
Fuel Injection Pump	17549-51014	1	01/01/2017	12/31/2017
Fuel Injection Pump	1G820-51013	1	01/01/2017	12/31/2017
Engine Model #2				
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF01	
Displacement Per Cylinder (in iters)	0.24	Total Displac	cement (in 0.479	
Engine Block Arrangement	Inline			
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
2	67	68	10	3600
	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Power (Kw)
27.9	3600	3600	27.9	10
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)
2700	5	5	15.4	15.4
Method of Aspiration	Naturally Aspirated			
Number of Aspiration Devices		Aspiration D Configuratio		
Turbocharger Type(s)		Account for the Control of the Contr		
Charge Cooler Type				

Date: 11/21/2016 05:25:12 PM	Certification	- Intermeter	- 110 PO11	
Engine Family	HKBXL.719KCC	Model Year	2017	
Variable Valve Lift?	No			
Number of Inlet Valves per cylinder	1	Number of I per cylinder	Exhaust Valves	
Production and Sales Info	rmation			
Sales Area	Both			
Production Start Date		Production 1	End Date	
	9 277 ()		W <u>======</u> U	
·				8
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injection Pump	16001-51012	1	01/01/2017	12/31/2017
Fuel Injectors	16001-53002	2	01/01/2017	12/31/2017
Fuel Injectors	16871-53002	2	01/01/2017	12/31/2017
Fuel Injection Pump	17548-51014	1	01/01/2017	12/31/2017
Fuel Injection Pump	1E110-51013	1	01/01/2017	12/31/2017
Engine Model #3				
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF0	2
Displacement Per Cylinder (in	n 0.24	Total Displa	cement (in	
liters) Engine Block Arrangement	0.24 Inline	liters)	0.479	
Number of Cylinders	***************************************	Studio (mm)	Dated Barrey (LVA)	Dated Speed (DDM)
2	Bore (mm) 67	Stroke (mm) 68	Rated Power (kW)	Rated Speed (RPM) 3600
Maximum Torque (N*m)		Maximum Speed Test	47.70	
Maximum Torque (N°m)	(RPM)	(RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Pow (Kw)
26.3	3600	3600	26.3	10
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Spe (mm3/stroke)
2700	5	5	15.2	15.2
Method of Aspiration	Naturally Aspirated			
Number of Aspiration Devices	18	Aspiration D Configuration	evice	
Turbocharger Type(s)		Connigarano	A.	
Charge Cooler Type	22			
Variable Valve Timing?	No			
/ariable Valve Lift?	No			
Number of Inlet Valves per		Number of E	A annual Malana	
ylinder			vnanet valvoe	
	-1	per cylinder	xnaust valves	
Production and Sales Infor		1.7.1.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7		
	D	1.7.1.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7		
Sales Area	mation	1.7.1.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7	1	
Sales Area Production Start Date	mation	per cylinder	1	
Sales Area Production Start Date	mation	per cylinder Production E	1 Cnd Date	Part Usage End Date
Sales Area Production Start Date Engine Parts Part Name	mation Both	per cylinder	1	Part Usage End Date 12/31/2017
Sales Area Production Start Date Engine Parts	mation Both Part Number	per cylinder Production E Part Quantity	I and Date Part Usage Start Date	
Sales Area Production Start Date Engine Parts Part Name Fuel Injectors	Both Part Number 16001-53002	per cylinder Production E Part Quantity 2	I and Date Part Usage Start Date 01/01/2017	12/31/2017
Production Start Date Engine Parts Part Name Fuel Injectors Fuel Injectors Fuel Injection Pump	Part Number 16001-53002 16871-53002	Production E Part Quantity 2 2	Part Usage Start Date 01/01/2017 01/01/2017	12/31/2017 12/31/2017
Sales Area Production Start Date Engine Parts Part Name Fuel Injectors Fuel Injectors Fuel Injection Pump Engine Model #4	Part Number 16001-53002 16871-53002	Production E Part Quantity 2 2 1	Part Usage Start Date 01/01/2017 01/01/2017	12/31/2017 12/31/2017 12/31/2017
Sales Area Production Start Date Engine Parts Part Name Fuel Injectors Fuel Injectors Fuel Injection Pump Engine Model #4 Engine Model	Part Number 16001-53002 16871-53002 17548-51014 Z482-D2-EF	Production E Part Quantity 2 2 1 Engine Code	Part Usage Start Date 01/01/2017 01/01/2017 01/01/2017	12/31/2017 12/31/2017 12/31/2017
Fuel Injectors Fuel Injectors	Part Number 16001-53002 16871-53002 17548-51014 Z482-D2-EF	Production E Part Quantity 2 2 1	Part Usage Start Date 01/01/2017 01/01/2017 01/01/2017	12/31/2017 12/31/2017

Engine Family	HKBXL.719KCC	Model Year	2017		
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)	
2	67	68	10	3600	
Maximum Torque (N*m)	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Powe (Kw)	
25.5	3600	3600	25.5	10	
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)	
2700	5	5	14.7	14.7	
Method of Aspiration	Naturally Aspirated				
Number of Aspiration Devices	A 37	Aspiration D Configuratio			
Turbocharger Type(s)					
Charge Cooler Type					
Variable Valve Timing?	No				
Variable Valve Lift?	No				
Number of Inlet Valves per	NO	Number of F	xhaust Valves		
cylinder	1	per cylinder	xnaust valves		
Production and Sales Infor	mation				
Sales Area	Both		20 Maria (20 Mar		
Production Start Date		Production E	End Date		
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date	
Fuel Injection Pump	16001-51012	1	01/01/2017	12/31/2017	
Fuel Injectors	16001-53002	2	01/01/2017	12/31/2017	
Fuel Injectors	16871-53002	2	01/01/2017	12/31/2017	
Fuel Injection Pump	17548-51014	1	01/01/2017	12/31/2017	
Fuel Injection Pump	19007-51014	1	01/01/2017	12/31/2017	
Fuel Injection Pump	1E110-51013	1	01/01/2017	12/31/2017	
Engine Model #5					
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF04		
Displacement Per Cylinder (in liters)		Total Displacement (in liters) 0.479			
Engine Block Arrangement	Inline	7			
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)	
2	67	68	9	3600	
Maximum Torque (N*m) S	(RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Power (Kw)	
24.4	3600	3600	24.4	9	
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)	
2700 Method of Aspiration	5 Naturally Aspirated	5	14.2	14.2	
5-24-4-4-3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		Aspiration Do			
Number of Aspiration Devices		Configuration			
Turbocharger Type(s)					
Charge Cooler Type	 N				
Variable Valve Timing?	No				
Variable Valve Lift?	No	g u y ygynoù u n ze disteror a r am	10 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10		
Number of Inlet Valves per cylinder	nlet Valves per Number of Exhaust Valves 1 per cylinder 1				
Production and Sales Inform	nation				
Sales Area	Both				
Production Start Date	01/01/2017	Production E	nd Date 12/31/2017 016-10-06 20:09:59 246		

Engine Family	HKBXL.719KCC	Model Year	2017			
Engine Parts						
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date		
Fuel Injection Pump	16001-51012	1	01/01/2017	12/31/2017		
Fuel Injectors	16001-53002	2	01/01/2017	12/31/2017		
Fuel Injectors	16871-53002	2	01/01/2017	12/31/2017		
Fuel Injection Pump	17548-51014	1	01/01/2017	12/31/2017		
Fuel Injection Pump	19007-51014	1	01/01/2017	12/31/2017		
Fuel Injection Pump	1E110-51013	1	01/01/2017	12/31/2017		
Engine Model #6						
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF	05		
Displacement Per Cylinder (in iters)	n 0.24	Total Displacement (in liters) 0.479				
Engine Block Arrangement	Inline		31177			
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)		
2	67	68	7	2600		
Maximum Torque (N*m)	Speed at Maximum Torque (RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Powe (Kw)		
26.4	2600	2600	26.4	7		
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Spee (mm3/stroke)		
1950	5	5	14.3	14.3		
Method of Aspiration	Naturally Aspirated	<u>.</u>	1 110			
955 See -41 (1900) (19 (1900) -2010) (190	n. en. en	Aspiration D				
Number of Aspiration Devices Furbocharger Type(s)	•	Configuration	1			
Charge Cooler Type	22					
Variable Valve Timing?	No					
Variable Valve Lift?	No					
Number of Inlet Valves per cylinder	1	Number of Exhaust Valves per cylinder 1				
Production and Sales Infor	E	p,				
Sales Area	Both					
Production Start Date		Production End Date				
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date		
Fuel Injection Pump	16001-51012	1	01/01/2017	12/31/2017		
Fuel Injectors	16001-53002	2	01/01/2017	12/31/2017		
Fuel Injectors	16871-53002	2	01/01/2017	12/31/2017		
Fuel Injection Pump	17548-51014	1	01/01/2017	12/31/2017		
Fuel Injection Pump	19007-51014	1	01/01/2017	12/31/2017		
Fuel Injection Pump	1E110-51013	1	01/01/2017	12/31/2017		
Engine Model #7						
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF0	06 °		
Displacement Per Cylinder (in	1 200020 (News)	Total Displac	ement (in			
iters)	0.24	liters)	0.479			

Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
2	67	68	8	3000
Maximum Torque (N*m) S	(RPM)	Maximum Speed Test (RPM)	Torque at Maximum Speed (N*m)	Maximum Engine Power (Kw)
26.4	3000	3000	26.4	8
Intermediate Test Speed (RPM) 2250	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%) 5	Fuel Rate at Maximum Torque (mm3/stroke) 14.6	Fuel Rate at Rated Speed (mm3/stroke) 14.6
	#7.00	3	14.0	14.0
Method of Aspiration	Naturally Aspirated	Aspiration I	No. do	
Number of Aspiration Devices		Configuration		
Turbocharger Type(s)				
Charge Cooler Type	**			
Variable Valve Timing?	No			
Variable Valve Lift?	No			
Number of Inlet Valves per cylinder	1	Number of F per cylinder	Exhaust Valves	
Production and Sales Infor	mation			
Sales Area	Both			
Production Start Date		Production 1	End Date	
Engine Parts			<u> </u>	
D-4 N	D V I	B 40 44	D 4 H C4 - 4 D -4	D I'
Part Name	Part Number	Part Quantity	Part Usage Start Date	Part Usage End Date
Fuel Injection Pump	16001-51012	1	01/01/2017	12/31/2017
Fuel Injectors Fuel Injectors	16001-53002 16871-53002	2 2	01/01/2017	12/31/2017
Fuel Injection Pump	17548-51014	1	01/01/2017	12/31/2017 12/31/2017
Fuel Injection Pump	19007-51014	1	01/01/2017	12/31/2017
Fuel Injection Pump	1E110-51013	.1	01/01/2017	12/31/2017
Engine Model #8		11-50		0.000
Engine Model	Z482-D2-EF	Engine Code	Z482-D2-EF07	ţ
Displacement Per Cylinder (in liters)		Total Displac		
Engine Block Arrangement	Inline			
Number of Cylinders	Bore (mm)	Stroke (mm)	Rated Power (kW)	Rated Speed (RPM)
2 Maximum Torque (N*m) S	67 peed at Maximum Torque (RPM)	68 Maximum Speed Test (RPM)	5 Torque at Maximum Speed (N*m)	1800 Maximum Engine Power (Kw)
24.4	1800	1800	24.4	5
Intermediate Test Speed (RPM)	Lower Tolerance of Maximum Power (%)	Upper Tolerance of Maximum Power (%)	Fuel Rate at Maximum Torque (mm3/stroke)	Fuel Rate at Rated Speed (mm3/stroke)
1350	5	5	13.6	13.6
Method of Aspiration	Naturally Aspirated			
Number of Aspiration Devices		Aspiration D Configuration		
Turbocharger Type(s)				
Charge Cooler Type				
Variable Valve Timing?	No			
Variable Valve Lift?	No	\$\infty\text{\tin}\text{\tetx}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\ti}\tint{\text{\text{\text{\text{\text{\text{\text{\tin}}\tint{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi}\tint{\text{\text{\text{\text{\texi}\tint{\text{\texi}\tint{\texit{\text{\text{\text{\text{\texi}\tint{\text{\texi}\text{\		
Number of Inlet Valves per cylinder	1	Number of E per cylinder	xhaust Valves l	
Production and Sales Inform	nation			
Sales Area	Both			
Production Start Date				

Engine Family	HKBXL.719KCC Model Year		ear	2017		
Engine Parts						
Part Name	Part Number	Part Quantity	Part Usag	e Start Date	Part Usage End Date	
Fuel Injection Pump	16001-51012	1	01/01/2017		12/31/2017	
Fuel Injectors	16001-53002	2	01/0	1/2017	12/31/2017	
Fuel Injectors	16871-53002	2	01/0	1/2017	12/31/2017	
Fuel Injection Pump	17548-51014	1	01/0	1/2017	12/31/2017	
Fuel Injection Pump	19007-51014	1	01/0	1/2017	12/31/2017	
Fuel Injection Pump	1E110-51013	1	01/0	1/2017	12/31/2017	
Durability Information						
DF Determination Factor	Determined by Manufacturer	•				
Durability Engines						
Engine Name	Engine Code	4	Engine Id	Engine Service Accumulation in hou		
D1305-EF	D1305-EF01		6L2992		1520	
Deterioration Factors						
Pollutant Name		Deter	eterioration Factor Deter		ioration Factor Type	
Carbon Monoxide			0 Ste		ady-State Additive	
Nitrogen Oxides			0 Stea		ady-State Additive	
Particulate Matter			0 Steady-State Additi-		ady-State Additive	
Non-Methane Hydrocarbons			0	Steady-State Additive		

Engine Family	HKBXL.719	KCC	Model Year	2017			
Carryover Test Infor	mation						
Test Dataset #1							
T D T	Test data for	a current engine model					
Test Data Type	in this Engin	e ramily	Manufacturer Test Dataset				
Verify Test Dataset Numb	er DKBXLM00	001981	Number	A4620418			
Engine Model	Z482-D2-EF	£	Engine Code	Z482-D2-EF01			
Engine Id	CE0538		Engine Displacement (in liters)	0.479			
Number of hours Engine	was run		Crankcase Emission		1207202 L20		
prior to test	20		Discharge Path	CCEs Routed into the	e Air Inlet System		
Test Date Test Fuel	06/11/2012						
7-15 ppm Ultra Low Sulfur	Diesel						
Special Test Procedure Us		amation EEMBD	Tost Lab Cada	2			
Test Lab Name Engine Operation	Constant Spe	ooration - EEMPD	Test Lab Code Steady-State Cycle Type	Steady-State 5-Mode	Cycle		
Engine Operation	Constant Spo	.cu	Steady-state Cycle Work	Sicady-State 5-1410de	. Cycle		
Steady-State Modal Testii	ng Type Ramped-Mo	dal Testing	(kW-hr)				
Transient Test Required	No						
Transient Hot Start Cycle (kW-hr)	Work		Transient Cold Start Cycle Work (kW-hr)				
Devices Regenerated duri Steady State Test (Rampe	ng d Model) None						
Devices Regenerated duri Start of a Transient Test	ng Cold None						
Devices Regenerated duri Start of a Transient Test	ng Hot None						
Test Comments							
Manufacturer's Assigned To	est Data No.: A4620418	(RMC) tested on 06/11/2	012				
Steady-State Ramped N	Modal Test Results						
Pollutant Name Test Result (Initial) (g/kW-hr)					ır)		
Non	-Methane Hydrocarbon	S	0.548				
	Carbon Dioxide		1012.4				
	Nitrogen Oxides		5.48				
	Carbon Monoxide		2.517				
	Particulate Matter	**************************************		0.212			
Nitrogen Oxide	es plus Non-Methane H Methane	ydrocarbons	0.003				
Certification Level Stea		Iodal Test Results		0.003			
		Certification Emission Result (g/kW-hr)		Family Emission Limit (g/kW-hr)	Pass/Fail Indicator		
Methane	0.003	0.00		••• •• •• •• •• •• •• •• •• •• •• •• ••			
Carbon Monoxide	2.517	2.5	6.6		Pass		
Nitrogen Oxides plus Non-Methane Hydrocarbons	i.met	6.0	7.5	<u> </u>	Pass		
Particulate Matter	0.212	0.21	0.40		Pass		
Nitrogen Oxides	5.48	5.48	1221				
Non-Methane Hydrocarbons	0.548	0.55	-	22	220		
Carbon Dioxide	1012.4	1,012.40					